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# Filling the gap in urban transport: Private sector participation in transition countries

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## **Abstract**

This paper reviews private sector participation (PSP) in urban transport services in central and eastern Europe and the Commonwealth of Independent States. It documents how the private sector is stepping in to address gaps caused by failing public services in poorer countries and identifies a strong negative relationship between GDP per capita and the degree of PSP. It also shows that, when controlling for the resource constraint, there is a positive relationship between the degree of PSP and the general reform process. The paper adds to international experience on the importance of fiscal factors in privatisation. It highlights that short-term constraints often push authorities to make decisions on private sector involvement without a full cost-benefit analysis and without the support of a developed regulatory framework.

*Keywords:* Private sector participation, urban transport, transition economies

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The working paper series has been produced to stimulate debate on the economic transformation of central and eastern Europe and the CIS. Views presented are those of the authors and not necessarily of the EBRD.

## INTRODUCTION

There has been a vast body of research on the impact of private ownership on enterprise performance.<sup>1</sup> There are however relatively few studies on the reasons why governments and local authorities endeavour to implement privatisation programmes. The economic case for privatisation is most often justified by private ownership being a crucial source of incentives for innovation and efficiency (Shleifer, 1998). There are also other theoretical arguments supporting competition between multiple private enterprises (Megginson and Netter, 2001).<sup>2</sup> However, as many acknowledge, in such complicated matters as privatisation, theory alone is unlikely to be conclusive (Laffont and Tirole, 1993).

The empirical research on the determinants of private sector participation in supplying services traditionally reserved for the public sector is nevertheless relatively scarce. A number of recent studies document (in the context of the US) the importance of the political composition of legislatures, supply shortages (Price and Riccucci, 2005) and the availability of investment funds (Brudney *et al.*, 2005) for decisions to privatise or outsource services. Using international data, Davis *et al.* (2000) demonstrate that income from large-scale privatisations is often used to boost state revenues. The importance of privatisation income for the state budgets of transition countries is also documented in EBRD (2004). There is, however, a shortage of sector-specific studies based on international experience.

This paper concentrates on private sector participation in urban transport in central and eastern Europe and the former Soviet Union.<sup>3</sup> This sector is particularly interesting as the low value and poor condition of its assets at the beginning of transition did not make it an attractive source of privatisation revenues for state budgets. Private sector participation in urban transport is also unlikely to reflect the rush to public private partnerships observed in other sectors, which were aimed at alleviating the fiscal constraints of central governments.<sup>4</sup> As a result, decisions to involve the private sector in the provision of urban transport have been based on other factors. Hence, the sector provides a unique testing ground for the importance of local availability of investment funds, belief in private sector efficiency and supply shortages.

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<sup>1</sup> See e.g. Megginson and Netter (2001) for a comprehensive review.

<sup>2</sup> These are based on the optimality of competitive Pareto equilibrium under the fundamental theorem of welfare economics. The necessary assumptions include that there are no externalities in production or consumption, that the product is not a public good, that the market is not monopolistic in structure and that information costs are low.

<sup>3</sup> This paper covers 27 transition countries: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, FYR Macedonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Serbia and Montenegro, Slovak Republic, Slovenia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan. Urban transport refers here to any form of mass transport (excluding private cars and small taxis) open to the public and run within the boundaries of municipal areas (excluding inter-city transport). It excludes maintenance of roads or any other infrastructure not in the ownership of urban transport providers.

<sup>4</sup> See World Bank (2005).

The contribution of this paper is three-fold. First, it provides a comprehensive overview of private sector participation in urban transport in transition countries. Second, it assesses the reform process, sequencing and timing of different steps to involve the private sector and develop the overall municipal transport policy. Third, it analyses the determinants of private sector involvement in urban transport. The paper shows that a combination of financial constraints and broad reform drive can explain more than half of the variability across transition countries in private sector participation in municipal service provision.

The paper builds on EBRD (2004) and recent reviews of industry practice (e.g. Gwilliam, 2003; Estache and Gomez-Lobo, 2005; and Halcrow Fox, 2000). The paper also contributes to the broader debate on the determinants of privatisation, highlighting the importance of budgetary constraints and the general reform process for decisions to privatise companies. This result extends the empirical findings of Price and Riccuci (2005) and Brudney *et al.* (2005) to an international context.

The paper is organised as follows. Section 1 provides an overview of the urban transport sector in transition countries and describes forms of private sector participation. Section 2 describes the cross-country patterns, while Section 3 includes an empirical analysis of the determinants of privatisation of urban transport. Section 4 concludes the paper.

## **1. URBAN TRANSPORT IN TRANSITION COUNTRIES**

Under socialism, services such as urban transport were usually provided to citizens by public sector companies for free or at very low prices. Companies operated under soft budget constraints and were financed through direct subsidies from the public budget. There was no link between the cost of service provision and the revenues raised through the sale of tickets or other services provided by a public enterprise (Mitric, 1999).

At the beginning of the transition process in the early 1990s, when fares were at very low levels, revenues were often not sufficient to pay for wages and fuel bills. As a result, the renewal of rolling stock fleet was stalled and services interrupted when public subsidies did not arrive on time. As most countries in the region struggled with substantial social and economic changes, the reform of municipal services was not seen as a priority for local politicians.

The transition process coincided with private sector participation (PSP) becoming one of the key issues in international debates on sustainability and the efficiency of urban transport networks. Under appropriate regulatory arrangements, most experts and practitioners expected private companies to deliver visible improvements in the efficiency and price of services (Estache and Gomez-Lobo, 2005). Many feared, however, that associated cost cuts might lead to reduced safety and lower capital investments. The record of existing PSP has also been mixed. While privatisation of municipal bus transport in the UK was generally successful, other schemes, including most notably the London Underground PSP, have been much more controversial (Comptroller and Auditor General, 2004).

This mixed experience with urban transport PSP echoed arguments formulated in the theoretical literature a few decades earlier. In particular, Mohring (1972) argued that unregulated private operators may supply too little service (in terms of frequency) since they do not take into account the social benefits of reducing waiting times of passengers by running additional buses on the network. This is because, although each extra bus decreases the interval between buses for the whole route, it also adds private cost that the firm must recoup. Therefore, multiple equilibria in provision of urban transport can exist, ranging from an expensive and frequent high-quality service at one end of the spectrum, to a low-quality and low-cost, unreliable service.

More recently, the dominant view on the merits of private sector participation in urban transport appears to support the proposition that private sector involvement improves performance (see e.g. Industry Commission, 1994 or Bureau of Transport and Regional Economics, 2002), though opinions to the contrary can still be found (see e.g. Mees, 2000). There is, however, a consensus that private involvement in urban transport requires a certain degree of administrative intervention and centralised planning to be efficient. This is often justified by the need for general subsidies to be given to urban transport to compensate for positive externalities of higher urban transport usage. The larger the number of urban transport users, the lower the car traffic, congestion and environmental damage.

A number of studies have identified key regulatory responsibilities. These responsibilities include management of a franchising system that reflects social objectives and ensures wide coverage by the urban transport network, fares consistent with the financial viability of franchises, monitoring and enforcement of contracts, as well as up-front confrontation of any vested interests (Gwilliam, 2003). The importance of sequencing reforms, coordination and some form of centralised organisation becomes even more pronounced once it is recognised that municipal transport is a commodity whose production involves increasing returns to scale. In addition, this importance is

highlighted by the fact that any deterioration in urban mass transport service decreases number of users and leads to a downwards spiral in quality, coverage and usage of the service (Mohring, 1972).

Although leaving public services fully to the market would probably increase cost-efficiency, full deregulation would often result in fragmentation of the transport network and decrease the attractiveness of services. In fact, the countries in Europe that have introduced market forces in a controlled manner seem to have the best of both worlds. In these countries, public service requirements, such as affordability, accessibility and network integration, are implemented while market incentives for quality and cost improvements are in place. Through tendering of exclusive rights for providing public services for a limited period of time, operators are exposed to market forces but are able to develop a public transport market and are willing to invest in their companies (Gleijm, 2003).

As transition started only in the early 1990s, transition countries have stayed on the sidelines of this comprehensive reform process (Estache and Gomez-Lobo, 2005). Urban public transport networks in transition countries have encountered structural problems that could have endangered even well-functioning transport systems. Local markets have been characterised by a limited number of players, with publicly owned incumbents having a dominant position. Incumbents lacked competitiveness and incentives to develop attractive services. As a result, the attractiveness of services decreased, especially in comparison with private cars, creating a danger that public transport would become an inferior product, suitable for a diminishing number of customers.

In many cities private entrepreneurs have come forward to fill the gap in services. With increasing private sector involvement, there was a need for a clear regulatory framework to ensure a level playing field. However, lack of experience in regulation and weak institutional capacity of local authorities often prevented the creation of a capable public transport authority that would be able to enforce competition among private service providers and force them to act in an orderly and law-abiding manner.

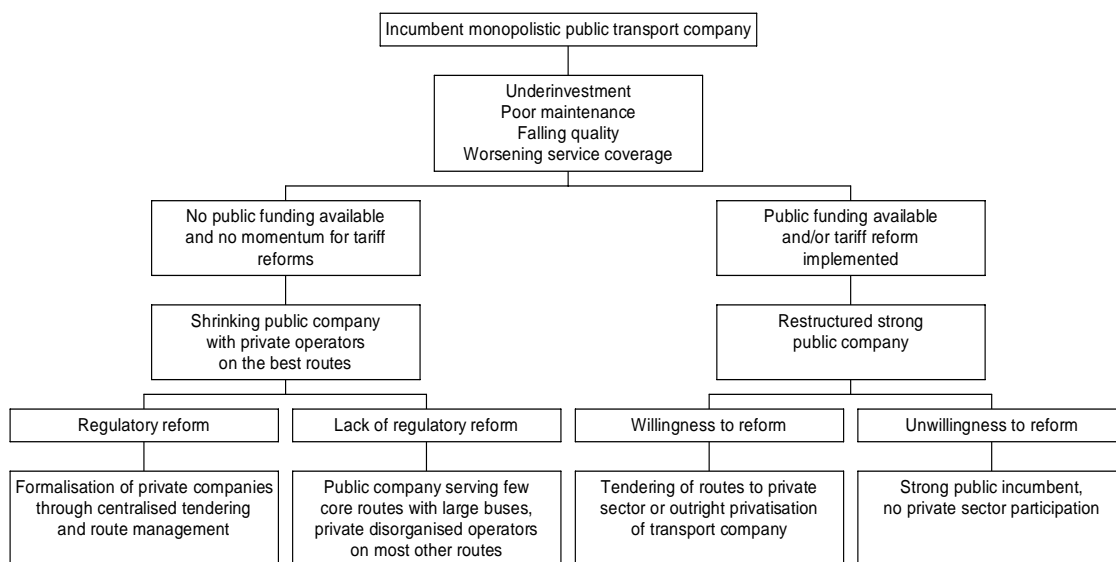
Inadequate regulation meant that new providers were often free to provide their services without integration or overall management of the public transport system. First experiences with tendering have seldom improved the quality of service or provided better value for money. This is often due to procurement irregularities or local corruption. Many of them have failed because of poor tender design and an undue rush in the tendering process. There has also been relatively little interest by international public transport companies to enter the markets. As a result, transport infrastructure and rolling stock have deteriorated. Cost recovery has remained low (although it is increasing), while operators have been under pressure to cut costs and services, mainly due to an increased unwillingness of the government to compensate loss-making operations (Gleijm, 2003). The problem has often been compounded by the existence of large groups of passengers qualifying for discounted tickets (students, pensioners, war veterans, etc.) and no clear mechanism in place to reimburse public service providers for lost revenues.

Chart 1 illustrates a typical evolution of municipal transport organisation since the beginning of transition. Following the collapse of centrally planned countries, incumbent public transport companies faced a shortage of funds, leading to underinvestment, poor maintenance, falling quality and worsening service coverage. The costs were driven up by the very high number of staff, especially in workshops and administration. Although the number of vehicles remained

high, many of them were not in an operational condition, waiting either to be repaired or to be used as a source of spare parts. Under-equipped workshops were increasingly unable to cope with the volume of repairs required. To make things worse, the companies usually continued to operate in a supply-driven manner, without assessing consumer needs and monitoring commuter demand.

As a result, private, usually unlicensed, operators appeared on the routes with highest passenger demand, mostly using the bus stop infrastructure of the incumbent companies. This usually triggered one of two responses. Where public funds were available, incumbent transport companies were refinanced and restructured, and measures to regulate private minibuss operators were introduced. In many cases, largely in the most advanced transition countries, this led to the creation of independent municipal transport companies, usually owned by local authorities. Such companies, described by Cornwell and Bruggeman (2004), could raise investment finance on their own account, with income firmly secured by a combination of predictable fare box revenues and service payments from local authorities.

**Chart 1: Urban transport evolution in transition countries**



Where public funds for investments were not available and tariffs could not be increased for political reasons, the deterioration of public transport companies continued. The most profitable routes were increasingly taken over by private operators offering more demand-responsive services, usually in smaller vehicles that often did not satisfy basic safety requirements. Where the failure of the traditional public transport system has been triggered by the loss of external sources of financial support, local administrators in many cases turned a blind eye to these developments or accepted them as a temporary measure until good times returned (Gwilliam, 2003).

Consequently, two distinct models of urban transport provision developed. In the absence of centralised regulation, the incumbent urban transport company continued to provide a skeletal

service, while most of the routes and traffic were increasingly served by private providers. These providers operated a combination of various size vehicles, frequently dominated by cheap minibuses with low maintenance requirements. These operators have often organised themselves to protect their routes from new entrants or to ensure that basic infrastructure (e.g. bus stop bays) is maintained. In the absence of service payments from local authorities, only those routes on which passenger traffic has generated sufficient revenues to cover the service provider's costs have been maintained. In some cities, the authorities accepted private urban transport companies and made steps to formalise the situation by issuing licences and tendering individual routes to ensure more uniform coverage. This has often pushed some of the weakest service providers out of the market. However, the remaining operators were forced to obey minimum standards of safety and quality, providing more organised and reliable service to the public and reintroducing wider coverage of urban transport networks to the areas that could not be served on a purely commercial basis.

The municipalities that managed to reform incumbent transport companies and maintain a centralised system of urban transport management also had at least two different approaches to long-term private sector involvement. In some cases, strong vested interests led to policies asserting that transport is a social service which can only be responsibly provided directly by the public sector, or at the very least subject to detailed control by the public sector (Gwilliam, 2003). Under these circumstances, the private sector had little chance to develop.

Alternatively, local authorities have initiated actions specifically intended to invite the private sector to provide urban transport services. This has taken the form of either an outright privatisation of the incumbent urban transport company or tendering of selected routes or services to the private sector. Such tenders often attracted not only local companies but also some of the international transport groups eager to secure a foothold in transition countries.

As a result, the private sector entered urban transport in transition countries in four distinctive forms, summarised in Table 1. The fastest and most flexible way of entry was through the provision of minibus services, operating originally parallel to municipal urban transport, and frequently "cherry-picking" the most profitable routes. The intensity of such entry appears to have been proportional to the unreliability and dilapidation of the publicly owned fleet. In addition, smaller and secondary cities have had more private entry than large municipalities, particularly those with multimodal transport systems such as tram or underground networks. Most of the private entrepreneurs made use of the often confused regulatory situation, whereby public transport companies, with fixed low fares, concessionary tickets and often unpaid subsidies, usually lacked resources to compete against private buses. After the initial boom, the subsequent regulatory tightening either phased out the minibus operators (e.g. in Poland) or forced them to organise, consolidate and operate pre-determined routes according to agreed timetables within a certain regulatory set-up (e.g. in Central Asia and Caucasus). In some countries (e.g. Albania), the private sector still remains largely unregulated.

Private sector entry into urban transport services has also occurred through the operation of full-size buses, either by setting new routes in parallel to those offered by publicly owned transport, or by operating within the publicly owned transport system through outsourcing of individual routes by public providers. Such companies developed in, for example, Russia (Moscow), Serbia and Montenegro (Belgrade), Bulgaria (Sofia) and Poland (Gdynia and Warsaw). These companies are larger in size than most minibus providers, operate under long-term asset management policies and rely on bank financing rather than pooled family resources.

The last, and most infrequent, way of private entry relies on outsourcing all municipal transport services by local authorities to specialised, usually international companies. Such solutions have been adopted, among others, in Tartu, the second largest city in Estonia, and in Tczew, a medium-sized town in northern Poland (both operated by Connex). Under this model, a private company takes over operation of all municipal bus routes. Unlike the earlier forms of private participation, this does not necessarily lead to competition in service provision, but usually opens access to capital necessary for asset renewal and company restructuring, which are often set as requirements of the privatisation tender.

**Table 1: Forms of private sector participation in urban transport in transition countries**

<b>Form of private sector participation</b>	<b>Example</b>
Large international investors	Connex in Tartu (Estonia), Tczew (Poland)
Relatively large local investors	Avtoline in Moscow (Russia)
Small local investors operating in regulated market	Astana (Kazakhstan), Kaunas (Lithuania)
Small local investors operating in unregulated market	Tirana (Albania)



## 2. CROSS-COUNTRY PATTERNS

The degree of private sector participation in urban transport services across transition countries is summarised in Table 2. The index is constructed by reviewing private sector participation in the provision of urban transport in a number of large cities in each country. Information has been collected from other publications (see references at the end of the paper), EBRD project documents and interviews with urban transport users in the field. The index measures the share of urban transport passengers carried by the private sector. A company is classified as private sector if vehicles are owned or operated by a private enterprise. The index aims to encompass formal and informal transport, including both private companies owning full-size buses and individuals operating unlicensed minibuses or other vehicles capable of carrying passengers (excluding private car hire). Although this is an imperfect measure, the index appears to be the most comprehensive available measure of private sector participation in urban transport in transition countries.

Generally, the poorer the countries and the more severe the fiscal constraints faced by municipalities,<sup>5</sup> the larger the degree of private entry. The resulting general pattern is opposite to that observed in most other industries, since the countries with the most advanced private sector participation in urban transport are those lagging in many other transition measures. The Central Asian countries have the largest share of urban transport provided by private companies, closely followed by Russia and other large countries in the Commonwealth of Independent States (CIS). Private urban transport providers are less popular in south-eastern Europe (SEE), while central Europe and the Baltic states (CEB) have almost all urban transport services in public hands. In the CIS and parts of SEE, private urban transport is dominated by local enterprises, usually providing minibus services. In CEB, the presence of multinational transport companies is more prevalent, regulation is stricter and private sector commonly operates large buses.

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<sup>5</sup> Note that fiscal constraints faced by municipalities are not necessarily related to the fiscal balance of central governments. They are more often a function of the local administration's income and investment/expenditure needs, the former often related to GDP levels.

**Table 2: Private sector participation in urban transport**

<b>Country</b>	<b>PSP indicator</b>	<b>Country</b>	<b>PSP indicator</b>
Albania	3.5	Latvia	2.5
Armenia	3.0	Lithuania	2.5
Azerbaijan	3.5	Moldova	3.0
Belarus	2.5	Poland	2.0
Bosnia and Herzegovina	3.0	Romania	2.5
Bulgaria	3.5	Russia	3.0
Croatia	1.0	Serbia and Montenegro	2.0
Czech Republic	2.0	Slovak Republic	1.0
Estonia	2.5	Slovenia	1.0
FYR Macedonia	2.5	Tajikistan	3.0
Georgia	3.0	Turkmenistan	2.0
Hungary	2.0	Ukraine	2.5
Kazakhstan	3.0	Uzbekistan	3.5
Kyrgyz Republic	3.5		

Source: EBRD (2004).

Note: 1 = No or negligible PSP. 2 = Small PSP (no more than 15 per cent of the market is served by privately owned companies or a somewhat larger share is served by state-owned companies operating under private management contracts). 3 = Noteworthy PSP (at least 25 per cent of the market is served by privately owned companies, or an important share is served by state-owned companies operating under private management contracts). 4 = Substantial PSP (at least 60 per cent of the market is served by privately owned companies). 5 = Sector fully privatised.

### **Russia and the CIS**

Secondary cities in Russia and most of the cities in Central Asian and the Caucasus have the majority of their markets served by private operators. These are usually minibuses operating along pre-determined routes and according to pre-determined schedules. Although the quality of many vehicles remains poor, the service is relatively fast. In addition, within revised regulatory frameworks, an increasing number of municipalities use tenders to procure cheaper services that satisfy minimum quality requirements.

In some Russian cities, such as Moscow and Rostov-on-Don, the minibus companies have grown and expanded to provide full-size buses. In Moscow, over the last decade, a number of small companies have consolidated, creating Avtoline, the first large private company operating bus services capable of providing real competition to the municipal-owned transport services. Avtoline consists of more than 20 actively developing enterprises, with more than 5,000 employees and about 2,500 low and medium-capacity minibuses running more than 250 routes.

The company has about a six per cent share of the urban transport market in Moscow. Some secondary municipalities, including among others Tosna and Kurushy, facilitated private entry by transferring ownership of municipal companies to employees. Although in large agglomerations, such as Moscow or St. Petersburg, the municipal-owned companies still carry the majority of passengers, the overall share of the private sector in urban transport in Russia is around half.

Similar to the secondary cities in Russia, municipalities in Uzbekistan and the Kyrgyz Republic (excluding Bishkek) have introduced for-market competition, whereby private enterprises bid for the rights to operate bus lines for a fixed period of time. For example, in Osh in the Kyrgyz Republic, there are two independent enterprises (formed from the former bus company), several smaller companies operating minibuses and a large association of independent minibus operators. In Jalalabad, a much smaller Kyrgyz city, there are two main operating groups: one formed from the old public sector operator, and an operators' association developed by the city to offer competition. Overall, the private operators carry the majority of passengers in the Kyrgyz Republic.<sup>6</sup>

In Kazakhstan, the government broke up many of the large state-owned companies and facilitated a for-market competitive framework, increasing the role of private urban transport service providers. Nevertheless, inadequate enforcement of restrictions on interloping by informal operators on competitively tendered routes has reportedly undermined the financial sustainability of the franchise system in some Kazakh cities (Gwilliam, 2003). In Tbilisi, the capital of Georgia, there are at least seven bus enterprises and 64 minibus enterprises operating in a largely unregulated framework. In Uzbekistan, the authorities have taken pro-active steps to encourage development of associations of urban transport providers in a bid to organise the largely decentralised sector.

In Ukraine, urban transport companies in the major cities remain in public ownership, although many secondary cities, including Ivano Frankovsk and Ternopil, have a competitive private urban transport sector. Hundreds of private buses are now operating in cities throughout the nation. For example, in Odessa, private buses account for about 20 per cent of public transport services. In Belarus, private firms began entering the urban passenger transportation market in large numbers between 1999–2000. They developed quickly due to the absence of administrative impediments, especially in the towns where public companies failed to satisfy demand. In 2002 private firms provided services for about 20 per cent of the total number of routes, owning about as many buses as the state-owned companies. In Chisinau, the capital of Moldova, about 900 privately owned smaller minibuses, each with about 10 to 12 seats, operate in parallel to 412 trolleybuses and 230 buses run by the public company. In secondary cities, most urban bus operations are still carried out by former state-owned companies, supplemented by private sector services wherever economically efficient.

### **South-eastern Europe**

Although SEE has a smaller private sector share in urban transport than Russia and the CIS, in at least two countries, Bulgaria and Albania, the private sector provides more than half of urban transport services. In Bulgaria, private operators provide both minibus and large-bus services. As

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<sup>6</sup> According to Gwilliam (2003), the private sector carries more than 70 per cent of passengers in the Kyrgyz Republic.

in Russia, their presence is much stronger in secondary cities, including Plovdiv, the second largest city in Bulgaria, than in the capital, Sofia.

Provision of urban transport in Tirana and the rest of Albania remains largely disorganised. Private operators carry over 50 per cent of Tirana's public transport users in about 300, 9-seat licensed minibuses and an unknown number of illegal mini and micro-buses. The rest of the users are carried by the municipal operator in about 50 standard-size buses, which are cheaper but generally much slower and less reliable. There is no clear licensing policy, route tendering or centralised scheduling.

In other countries in the region, the role of the private sector is smaller. In Romania and FYR Macedonia, private minibuses operate in most large cities carrying a significant fraction of passengers, but the publicly owned incumbents remain dominant. In Skopje, the capital of FYR Macedonia, private providers are organised into a network parallel to the municipal network.

In Croatia and Bosnia and Herzegovina, the provision of private sector urban transport services remains negligible. In Serbia, following a crisis in the municipal-owned company, the private sector provides a significant share of buses in Belgrade, but the services in the secondary cities are almost fully in public hands. In Pristina, Kosovo, private buses and informal minibuses provide the majority of services, while a fraction of the market remains in the hands of a public company co-owned by the municipality and its employees.

### **Central Europe and the Baltic states**

The role of the private sector in the provision of urban transport in CEB is generally limited. The incumbent municipal companies benefited from the improving macroeconomic situation and stability of local finance, and managed to refurbish their fleets and provide services at standards acceptable to the local population. Good quality service coupled with still existing subsidies to municipal companies made profitable, private entry difficult. In many places, this situation was exacerbated by regulation imposing safety standards and regulating use of public bus stops by private providers. As a result, private entry in advanced transition countries largely developed through the tendering out of services by municipalities, either for entire cities or for individual lines. (This excludes the period in the early 1990s when private minibuses frequently operated parallel to public networks.)

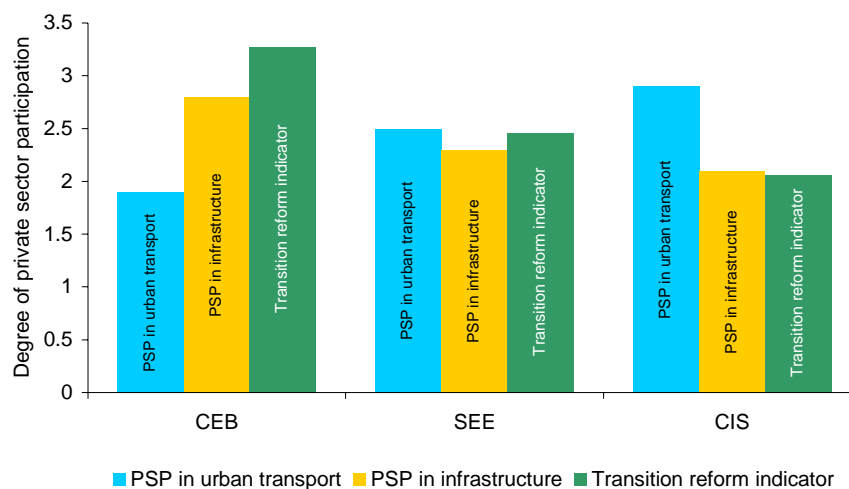
The most advanced country in the region is Estonia. In May 2001 the municipality of Tartu, the second largest city in the country, sold shares in the public bus company to Connex Transport. The privately owned company employs about 200 people, owns about 60 vehicles and runs urban bus lines in the city. In a similar move, the city of Parnau sold a 49 per cent share in a local bus company to a local investor. There are also frequent private minibus services running in parallel to large buses. In Riga, the capital of Latvia, the private sector carries about 15 per cent of total passengers, with the numbers even higher in smaller cities in the country. In most of the Lithuanian cities, privately run minibus companies licensed by municipalities provide services on routes where public transport services are not sufficient or non-existent. For example, in Kaunas, about 50 per cent of urban transport services are provided by a fleet of about 900 minibuses operated by some 60 firms.

In Warsaw, the capital of Poland, the municipality decided to tender out the provision of buses to be used on publicly served routes. As a result, about 10 per cent of the market is served by private

providers, including both multinational (Connex) and locally owned companies (ITS Michalczewski and Mobilis). The coastal city of Gdynia, which also introduced the tendering process, has about 25 per cent of its routes served by mostly local, private bus companies. While the tendering mechanism is present in a number of other secondary cities, to date only Tczew has outsourced the provision of all municipal transport to a multinational company. In the Czech Republic, Connex maintains a significant presence in many cities, including Prague, as it operates 11 municipal networks across the country. In Budapest, Hungary, the municipal public transport company outsourced a number of suburb routes, mostly in Buda, to private sector operators. In addition, companies with majority private ownership provide public transport in many smaller communities.

An interesting pattern emerging from the above analysis is that the degree of PSP in urban transport in transition countries is inversely related to the degree of PSP in infrastructure, as measured in EBRD (2004) and the average transition indicator measuring overall progress in reforms by EBRD (2004). In other words, countries that are general laggards in the reform process are also characterised by a high degree of PSP in urban transport. This is illustrated in Figure 1, which splits transition countries into three groups: CEB, SEE and the CIS. The highest degree of PSP in urban transport is observed in the CIS, which is also characterised by the lowest progress in transition, while the relatively advanced CEB has the least PSP in urban transport.

**Figure 1: PSP in transition regions**



Source: EBRD (2004).

Note: CEB = Czech Republic, Estonia, Hungary, Latvia, Lithuania Poland, Slovak Republic, Slovenia. SEE = Albania, Bosnia and Herzegovina, FYR Macedonia, Bulgaria, Croatia, Romania, Serbia and Montenegro; CIS = Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Russia, Ukraine, Tajikistan, Turkmenistan and Uzbekistan.

### 3. EMPIRICAL ANALYSIS

This section provides quantitative tests of some of the qualitative assessments made earlier in the paper. The analysis in sections 1 and 2 suggest that involving the private sector in managing urban transport networks has often been independent of general reform trends in the country. It also relies on the availability of funds to recapitalise the struggling incumbent enterprises. When such funds were not available, the private sector was fast to fill in the gap in provision of services.

Therefore, one could expect that the degree of PSP in urban transport depends, at least to a certain extent, on the size of local public funds and the availability of income for public investment in a given region. Richer regions and countries have more resources to maintain and subsidise their urban transport networks and thereby have fewer opportunities for the private sector to provide profitable services to the public. One measure of such constraint is the central government fiscal deficit. However, this reflects primarily the ability of the central government to balance the books, and does not take into account total availability of investment funds, particularly at the local level. In the absence of a reliable measure of the central-local fiscal relationship, gross domestic product per capita can serve as an alternative proxy for the capital available locally for urban transport investment. Given the necessary prioritisation of expenditures, poor countries are more likely than rich countries to concentrate on the most basic needs of their population and neglect urban transport.

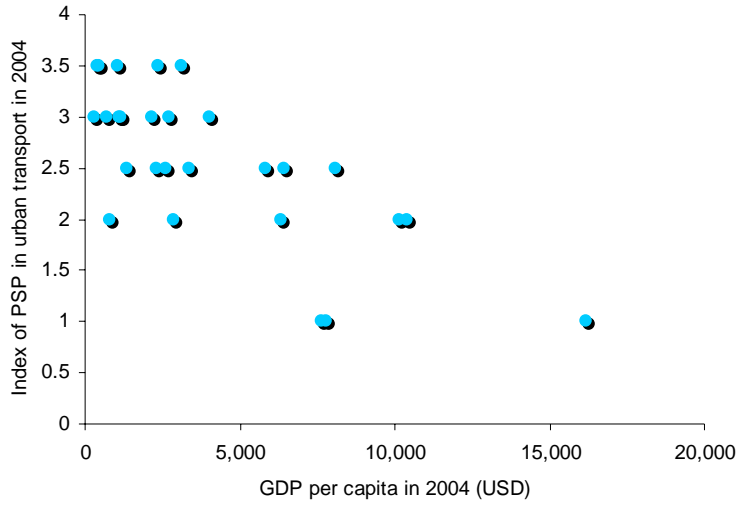
This can be formalised in the following equation:

$$PSP_{UT(i)} = const + \alpha \cdot GDP_{PC(i)} + \varepsilon_{(i)}, \quad (1)$$

where  $PSP_{UT(i)}$  is the degree of private sector participation in urban transport in a country ( $i$ ),  $GDP_{PC(i)}$  is GDP per capita,  $\varepsilon_{(i)}$  is a country-specific residual and  $const$  is a constant term in the regression. Given the analysis above, the expectation is that  $\alpha < 0$ .

The relationship between GDP per capita and PSP in urban transport is presented in Figure 2. The index of PSP in urban transport is taken from Table 2 and the US dollar-denominated GDP per capita at current prices in 2004 is taken from EBRD (2005). The figure confirms the expectation of a negative relationship between income per capita and the degree of PSP in urban transport. The poorer the country, the larger is the private sector involvement in the provision of urban transport.

**Figure 2: PSP in urban transport and GDP per capita in transition countries**



Source: EBRD (2004) and EBRD (2005).

The relationship in Figure 2 and econometric tests of the properties of regression residuals suggest that equation (1) should be estimated using logarithms of the PSP index and GDP data. The results are shown in the first column of Table 3 below. The relationship between the logarithm of the PSP index and the logarithm of GDP per capita in the 27 transition countries is significantly negative and the regression explains 41 per cent of the variability in the dependent variable.

The second column in Table 3 estimates an extended version of equation (1). The added component is the infrastructure transition indicator as reported in EBRD (2004).<sup>7</sup> The modified equation takes the form:

$$PSP_{UT(i)} = const + \alpha \cdot GDP_{PC(i)} + \beta \cdot IR_{(i)} + \varepsilon_{(i)}, \quad (2)$$

where  $IR_{(i)}$  is the infrastructure transition indicator for country ( $i$ ) and all other symbols are as in equation (1).

While the relationship between the degree of PSP and GDP per capita remains significantly negative, there is also a significant positive relationship between the degree of general infrastructure reform and PSP in urban transport in transition countries. The regression in Table 3 explains more than 50 per cent of the international variability of PSP and demonstrates that, when

<sup>7</sup> The infrastructure transition indicators are calculated as an average of five infrastructure reform indicators covering electric power, railways, roads, telecommunication, water and waste water (see EBRD, 2004, for more details). The indicator does not take into account the degree of PSP in urban transport or urban transport reform. Although it is in principle true that the richer countries of central and eastern Europe are more advanced in reforms than the poorer countries of the former Soviet Union, the correlation between the infrastructure transition indicator and GDP per capita for the 27 transition countries is only 74 per cent.

controlling for resource constraints, the general reform environment is significantly associated with the degree of private involvement in infrastructure services.

The last two columns of the table verify the robustness of this result by replacing GDP per capita at current prices with GDP per capita at purchasing power parity (PPP), as reported by the World Bank for 2004.<sup>8</sup> Purchasing power parity (PPP) conversion takes into account differences in the relative prices of goods and services, particularly those that cannot be internationally traded, and therefore has the potential to provide a more accurate overall measure of the real value of output produced by an economy compared to other economies.

**Table 3: PSP in urban transport in transition countries**

	PSP (log)	PSP (log)	PSP	PSP
Constant	2.60 (6.27)	3.21 (6.70)	3.48 (18.44)	3.17 (12.53)
GDP per capita in 2004 (log)	-0.23 (-4.24)	-0.36 (-4.46)		
GDP per capita in 2004 at PPP			-0.0001 (-5.65)	-0.0001 (-5.50)
Infrastructure reform (log)		0.58 (2.17)		0.72 (1.77)
R squared	0.41	0.51	0.57	0.62
F-statistic	17.49 (0.00)	12.39 (0.00)	31.88 (0.00)	18.94 (0.00)
Normality (Shapiro-Wilk test)	1.93 (0.03)	0.77 (0.22)	0.881 (0.19)	1.00 (0.16)
Homoscedasticity (White test)	4.76 (0.09)	11.70 (0.04)	3.33 (0.19)	3.91 (0.56)
Observations	27	27	26	26

Note: For the regression estimate t-statistics are given in brackets behind the estimates. For the F-statistics, the Shapiro-Wilk normality test and the White homoscedasticity test, the respective p-values are reported. Data for GDP at PPP levels in 2004 are not available for Serbia and Montenegro.

The relationship between income per capita and degree of private sector participation remains significantly negative, although its shape is now statistically better approximated by a linear rather than a logarithmic curve, as it has been the case for GDP measured at current prices. The significance of the infrastructure reform factor has declined somewhat but it is still positively related to the degree of PSP at the 10 per cent significance level. Overall, the regressions using GDP at PPP levels provide a better fit as measured by the  $R^2$  coefficient and the diagnostic statistic checking the properties of regression residuals (White and Shapiro-Wilk tests). It also fully supports the earlier conclusions. The bigger the resource constraint, the more extensive the private sector participation, and – when controlling for resource constraints – the general reform environment is positively related to the degree of private involvement in infrastructure services.

<sup>8</sup> See <http://www.worldbank.org/data/quickreference/quickref.html>.



#### **4. CONCLUSION**

This paper provides a comprehensive review of private sector involvement in urban transport in the 27 transition countries of central and eastern Europe and the former Soviet Union. It documents that the degree of private involvement has been proportional to the unreliability and dilapidation of the publicly owned fleet. Although at first the degree of private sector participation appears negatively related to the general reform process, quantitative analysis shows that, when controlling for resource constraints (approximated by GDP per capita), there is a significant positive link between the two. The analysis demonstrates the importance of resource constraints, which appear to be the key driving factor for private sector participation in urban transport. If entry is not prohibitively expensive, the private sector is quick to fill the gap formed by substandard public services. It is also very capable of recognising demand patterns and providing the price-quality mix of services demanded by clients, as long as it can support profitable operations. The analysis of various case studies and typical development of a municipal transport system in transition countries has also confirmed the importance of institutional strengthening of local authorities. This would assist them to competently manage the system and also identify the oversights of private sector service providers.

The paper fits into the broad literature on the determinants of privatisation and private involvement in the provision of public services. It extends the results obtained in the US, where decisions to involve the private sector in the provision of services traditionally provided by the state are often driven by resource constraints and general reform drive. It also confirms the international experience on the importance of fiscal factors in decisions to involve the private sector.

The paper also provides an interesting insight for the increasingly rich theoretical work explaining private involvement in different sectors traditionally dominated by publicly owned enterprises. While the theoretical analysis of the benefits of private ownership is likely to remain important, much more analysis needs to be devoted to short-term constraints, particularly of a fiscal nature. These constraints often push authorities to make decisions on private sector involvement without the benefit of relying on fully-fledged, long-term cost-benefit analyses or the support of developed regulatory frameworks.

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